

CLAIMS

1. Rotating mechanical and electrical connecting device (100) between a transport module, typically a trolley, (6) and handling and working devices (7, 8, 9, 10, 11) in a fused bath electrolysis aluminium production plant, characterised in that it comprises:

- a "fixed" frame (101) designed to be fitted to the said transport module (6) and comprising a hub (102) defining a rotation axis (103);

- a sleeve (121) surrounding the said hub (102) and capable of rotating about the hub (102) and about the said rotation axis (103),

- a first "rotating" frame (110) capable of rotating about the said rotation axis (103) and driving the said sleeve (121) in rotation, and designed to carry at least one handling and working device (7, 8, 9, 10, 11);

- a second "rotating" frame (120) capable of rotating about the said sleeve (121) and the said rotation axis (103), and designed to carry at least one handling and working device (7, 8, 9, 10, 11);

- a first plurality of sliding and rotating electrical contacts (113) each comprising at least one first member (1131) fixed to the fixed frame (101) and connected to at least one external conductor (117), and at least one second member (1132) fixed to the sleeve (121) and connected to at least one distribution conductor (118, 1181, 1182);

- a second plurality of sliding and rotating electrical contacts (114) each comprising at least one

first member (1141) fixed to the second rotating frame (120) and connected to at least one distribution conductor (119), and at least one second member (1142) fixed to the sleeve (121) and connected to at least one distribution conductor (1181, 1182);

- a first drive system (140, 141, 142) capable of rotating the first rotating frame (110) about the said axis (103);

- a second drive system (150, 151, 152) capable of rotating the second rotating frame (120) about the said axis (103).

2. Connecting device (100) according to claim 1, characterised in that it also comprises:

- a first annular bearing (111) between the fixed frame (101) and the first rotating frame (110) enabling rotation between these two frames about the rotation axis (103);

- a second annular bearing (112) between the first rotating frame (110) and the second rotating frame (120) enabling rotation between these two frames about the rotation axis (103).

3. Connecting device (100) according to either of claim 1 or 2, characterised in that the drive systems (140, 141, 142, 150, 151, 152) comprise a motor (140, 150), a gear (141, 151) and a toothed ring (142) or a toothed wheel (152).

4. Connecting device (100) according to either of claim 1 or 2, characterised in that the drive systems (140, 141, 142, 150, 151, 152) comprise one or more drive wheels based on surface grip and at least one track.

5. Connecting device (100) according to any one of claims 1 to 4, characterised in that it comprises complementary annular bearings (160, 161, 162, 163, 164) between the sleeve (121) and the fixed frame (101), possibly through the hub (102) and/or complementary annular bearings (170, 171) between the sleeve (121) and the second rotating frame (120).

6. Connecting device (100) according to any one of claims 1 to 5, characterised in that it also comprises rotating pneumatic and/or hydraulic connecting means (130, 131, 132, 133, 134) between the fixed frame (101) and at least one of the rotating frames (110, 120).

7. Connecting device (100) according to claim 6, characterised in that the rotating pneumatic connecting means (130, 131, 132, 133) comprise an axial cavity (130) in the central shaft (102), sealed rotating joints (131, 132) and complementary conduits (133, 134).

8. Connecting device (100) according to any one of claims 1 to 7, characterised in that the first rotating frame (110) is located between the fixed frame (101) and the second rotating frame (120).

9. Connecting device (100) according to claim 8, characterised in that the drive system of the second rotating frame (120) comprises a toothed wheel (152) fixed to the hub (102) and a motor (150) fixed to the second rotating frame (120) and fitted with a gear (151).

10. Pot tending module (5) for use in a fused bath electrolysis aluminium production plant and comprising

a trolley (6) and handling and working devices (7, 8, 9, 10, 11), characterised in that it also comprises:

- a connecting device (100) according to any one of claims 1 to 9, linked to the said trolley (6)
5 through the said fixed frame (101);

- a first turret (110') formed by the said first rotating frame (110) or linked to the said first rotating frame (110) and comprising at least one first handling and working device (7, 8, 9, 10, 11);

10 - a second turret (120') formed by the said second rotating frame (120) or linked to the said second rotating frame (120) and comprising at least one second handling and working device (7, 8, 9, 10, 11).

11. Pot tending module (5) according to claim 10,
15 characterised in that the connecting device (100) is placed so that the rotating frames (110, 120) are located below the fixed frame (101) when the trolley (6) is in working position on the travelling crane (4).

12. Pot-tending unit (3) for a fused bath
20 electrolysis aluminium production plant comprising a travelling crane (4) and at least one pot tending module (5) according to either of claim 10 or 11.

13. Use of a pot-tending module (5) according to either of claim 10 or 11 for doing work on electrolytic
25 cells (2) designed for the production of aluminium by fused bath electrolysis.

14. Use of a pot-tending unit (3) according to claim 12 for doing work on electrolytic cells (2) designed for the production of aluminium by fused bath
30 electrolysis.